

Collective action regimes in seaport clusters: the case of the Lower Mississippi port cluster

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Abstract

This paper analyses the competitiveness of the Lower Mississippi seaport from a cluster perspective, discussing the importance of local governance and collective action regimes for the competitiveness of the cluster. The case study of the Lower Mississippi port cluster shows that collective action regimes are relatively poorly developed in this cluster, compared with the seaport cluster of Rotterdam. Furthermore, the case shows these ineffective regimes are one of the reasons explaining the declining market share in overall throughput in the Gulf region. Houston, its nearest and main competitor, has grown much more than the Lower Mississippi port cluster. A number of collective action problems require effective collective action regimes that render significant benefits at the cluster level. Several proposals are formulated to improve the quality of the collective action regimes and hence enhance the performance of the Lower Mississippi port cluster.

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1. Introduction

This paper discusses the importance of collective action regimes for the competitiveness of ports. The paper builds on earlier work, where it was argued that ports can be fruitfully analysed as clusters of economic activities, related to the arrival of cargo and ships, and where a framework to analyse governance in port clusters was developed (de Langen, 2004). Furthermore, it was shown that five important collective action problems exist in seaports: training and education, innovation, marketing and promotion, hinterland access and internationalisation. Effective regimes that free resources for investment in these five areas do not develop automatically, despite the positive effects of these investments for the cluster as a whole. Individual firms may have difficulties providing the resources required to develop effective collective action regimes, because of the free rider problem, externalities, and other market failures (Visser and Boschma, 2004).

This paper presents a case study of the port complex of the Lower Mississippi. The study reveals the importance of collective action regimes for the competitiveness of the port cluster, and shows the complexity of creating effective regimes. We analyse the shortcomings of the existing regimes and opportunities to improve the quality of the regimes. Empirical evidence from a case study in Rotterdam is used as a ‘benchmark’ for the Lower Mississippi port cluster (LMPC).

The paper is structured in the following way. The relevance of the concept ‘collective action regimes’ in seaports is discussed in Section 2. A framework to analyse the quality of collective action regimes is discussed in Section 3. Case study evidence on the LMPC is presented in Section 4. Initiatives to improve the quality of governance in the LMPC are discussed in Section 5. A concluding section finalises the paper.

2. The relevance of analysing collective action regimes

A port cluster consists of all economic activities and public (-private) organisations related to the arrival of

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ships and cargo in ports.¹ Cargo handling, transport, logistics, manufacturing and trade activities are included in the port cluster (de Langen, 2004).

The bulk of the literature on port competitiveness deals with ports as transport nodes (see, e.g., Teurelinx, 2000). The ‘typical’ performance indicator in these kinds of studies is the volume of throughput. This indicator, however, is inadequate to capture a wide range of (direct, indirect and spillover) effects generated by ports, at different spatial scales. The value added generated in a port region is a better performance indicator, for the (local) port authority, local governments and local businesses (Haezendonck, 2001).²

In general, the competitive position of the transport node and the port cluster are complementary. An effective node increases the attractiveness of the port region for logistics and industrial activities, and a growing port cluster leads to a larger captive cargo base and, therefore, more cargo passing through the port. However, the value added per ton throughput is not similar for all ports, and changes over time. In Antwerp for example, value added per ton increased by 7% from 1990 to 2000 (Nationale Bank van België, 2003). In Rotterdam, value added per ton increased by 31%, in the same period (RMPM, 2003; Nationale Havenraad, 2003). The widespread use of the volume of throughput as a performance indicator for ports ignores the performance of the port as a cluster of economic activities. In turn, this leads to an overemphasis of factors such as depth, location and terminal handling charges, at the expense of factors that have an indirect, but increasingly important effect on the performance of the port cluster, such as the presence of knowledge, the quality of the hinterland access, and the quality of the labour pool. Upgrading these factors requires joint efforts of various actors in the port cluster in a ‘collective action regime’ (Campbell et al., 1991).

The effectiveness of collective action regimes is important for port clusters, because cargo owners make investment, routing and logistic decisions on the basis of the price and quality aspects of a port. A variety of firms, such as pilots, terminal operators, hinterland transport companies, transport service providers, warehousing firms, and transport intermediaries contribute to the quality of the port service. Each firm benefits from a competitive port service, but none can fully appropriate (internalise) the benefits of a competitive port

service. Hence, coordination is required to bolster investments in the long-term interest of all actors in a port cluster.

The analysis of seaport governance is often limited to the role of the port authority (Goss, 1990 and Stevens, 1999) and the appropriate mix of public and private investments (see the port reform toolkit of the World Bank, 2002). Notwithstanding the central role of port authorities, these are but one ‘actor’ that aims at improving the quality of collective action regimes in port clusters. Other actors, e.g. leader firms and branch associations, can also be important for the governance of change in port clusters.

3. Collective action regimes

Five variables that influence the quality of a collective action regime can be identified, based on a literature review (see de Langen, 2004 for a detailed discussion). Various actors have to contribute resources to the regimes. These resources can be financial and managerial, but also ‘political’ and relational. The more resources are invested in a regime, the higher the quality of such a regime. A first variable relevant to the quality of regimes is the presence of leader firms. Such firms have incentives and resources to invest in improving various regimes, and can play a leading role in the development of coalitions. Therefore, they are important for increasing the quality of a collective action regime (Olson, 1971).

Second, the participation and activities of public organisations influence the quality of a regime. Public organisations frequently contribute financially to collective action regimes (Porter, 1990). Third, the presence of an organisational infrastructure for collective action, which enables cooperation and thus serves as a means of gathering the required resources, is relevant. The infrastructure for collective action consists of associations, public–private organisations, and the internal network structure of clusters. These do not develop automatically, as various types of trust are required (Nooteboom, 2002) to reduce the transaction costs of co-operation, and to overcome static arguments against getting involved in any type of co-ordination beyond market price transactions between firms. Once developed, organisational infrastructure for collective action provides a basis for creating and developing effective regimes.

The fourth variable adding to the quality of a regime is the presence of a community argument (Bennett, 1998). A stronger willingness of the ‘port community’ to develop effective regimes leads to better coalitions. Finally, the voice (cf. Hirschmann, 1970) of individual firms contributes to the quality of a regime. The voice of private firms increases the pressure on associations, public and public–private organisations (that face no

¹ This definition does not imply a port cluster is only related to import cargo (arriving by ship). Activities related to export cargo (arriving in the port by various hinterland modes) are also included.

² A disadvantage of this performance indicator is that drawing ‘cluster borders’ is problematic. However, if (to some extent arbitrary) borders are drawn, time series of the value added generated in the cluster can be compared and show the performance. This is more important than the precise absolute amount of value added.

‘market selection pressure’) to be effective. This pressure enhances the performance of these organisations.

4. Case study: the Lower Mississippi port cluster

In this section, we present the results of a case study of the Lower Mississippi port cluster (LMPC). A similar case study was made for the port cluster in Rotterdam. Rotterdam and the LMPC are the largest ports of their continents in terms of throughput volume. Both have a diversified traffic base, and a relatively large number of activities related to cargo handling. Therefore, Rotterdam is used here as a ‘benchmark’ for the LMPC. Table 1 shows some basic features of the two seaports.

A central activity in the context of each case study was to conduct a survey among a significant number of industry experts. Next, relevant reports and studies were collected and analysed. The survey has been undertaken in a face-to-face setting, so that all questions could be explained, and respondents could (be asked to) explain their answers. The industry experts were selected on the basis of three criteria:

- Job position: senior positions with important firms, port specific associations and the (public) port authority.
- Experience in the industry: the majority of industry experts spent a long time working in the industry (see Table 2).
- Involvement in cluster governance: the majority of the experts either was involved in governance (for instance as a member of one or more boards of associations) at the moment of the survey, or before.

Before the start of a case study, an ‘initial expert list’ of some 20–30 industry experts was drafted, on the basis

of Internet sources (to select board members of associations, CEOs of leader firms in the cluster, etc.) and suggestions from an ‘embedded academic’ (in Rotterdam Prof. Drs. H.W.H. Welters and in the LMPC Dr. J. Renner). This list was adjusted and expanded during the case study by asking industry experts to mention and add to the list new experts, if they felt the list was incomplete. Individuals that were suggested by two or more experts were added to the list.

For the case study of the LMPC interviews with 31 port experts were conducted, and a survey was filled out, in September 2002. Results of the case study are discussed as follows: first, the geography and composition of the Lower Mississippi port cluster is discussed. Second, the institutional structure of the cluster is discussed. Third, we analyse the survey results on the quality of collective action regimes in the cluster.

4.1. Geography and composition

The Mississippi river is a major transport corridor in the United States. The river is accessible by relatively large seagoing vessels (up to 40.000 tons ‘deadweight’) up to 233.5 nautical miles inland. Fig. 1 shows the Lower Mississippi area.

This whole stretch of the river is one integrated port complex (see for instance Steamship Association of New Orleans, 2002). Cargo is handled on the riverbanks and midstream. More than 162 cargo-handling facilities are located in the LMPC. Precise statistics on cargo volumes for specific commodities in the LMPC are not available, especially related to domestic transport. Table 3 shows the volumes of foreign trade for five commodities.

In throughput volume the LMPC is the largest port complex in the world. The cluster region consists of 12 counties (called ‘parishes’ in Louisiana), located along the river, where port related activities are ‘overrepresented’ compared to the national average.

Table 1
Some characteristics of Rotterdam and the LMPC

Port	Total throughput 2002	Container throughput 2002	Estimate of inhabitants in the metropolitan region
Rotterdam	About 320 million tons	About 6 million TEU	About 1.2 million inhabitants
Lower Mississippi	About 420 million tons	About 0.3 million TEU	About 1.4 million inhabitants

Source: RMPM (2003), Louisiana Ports Association (2003).

Table 2
Experts in the LMPC and Rotterdam

Case	Number of initial experts	Additional experts	Sample size and response rate	Percentage experts involved in cluster governance	Average number of years working in the port cluster
Rotterdam	41	8	<i>N</i> = 43, 88%	90%	20
LMPC	26	12	<i>N</i> = 31, 80%	71%	19

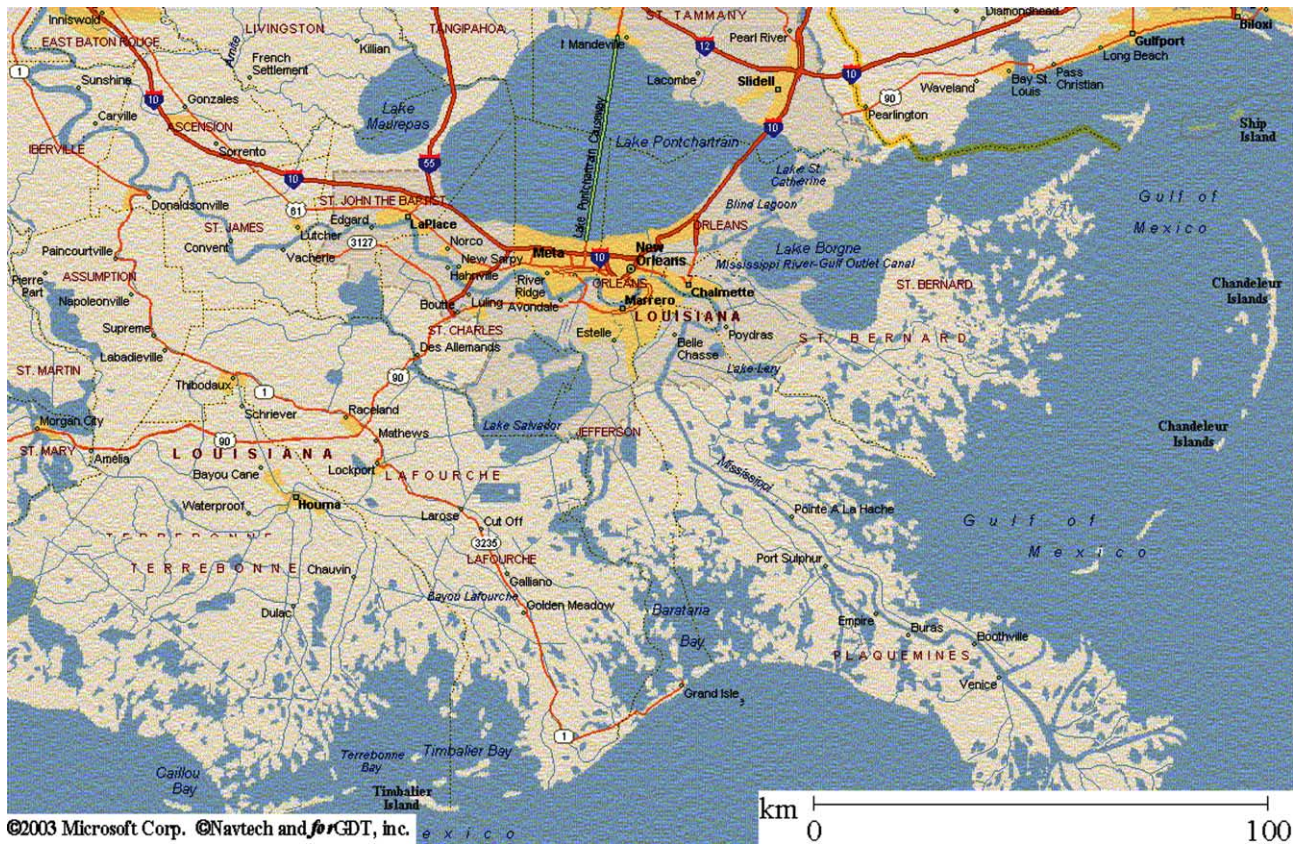


Fig. 1. The lower Mississippi area.

Table 3
Foreign cargo volumes and forecasts (million tons)

Commodity	Throughput 2000	Forecast 2020
Container cargo	8.7	18.5
Break bulk	34.1	76
Dry bulk	68.4	134
Liquid bulk	71	133
Neo-bulk	2.5	5.4
Total foreign cargo	196.8	336.9

Source: based on LATTs, 2003.

Table 4 shows the ‘specialisation index’ of the counties: a measure of the relative specialization of a local economy in a certain activity. An index of two means that the number of port related firms in the county is twice the national average (of 1.4%).³ Table 4 also shows the total number of firms in the port cluster, based on data from the Economic Census.

Table 4 shows that the region is specialised in port activities and the LMPC is an important cluster in the state of Louisiana (Ryan, 2001). Table 5 shows in which type of port-related activities the LMPC is specialised.

³ The number of firms engaged in port cluster activities as a percentage of all firms registered in the USA is 1.4%.

4.2. Institutional structure

Five public port authorities administer the LMPC. These are all ‘political subdivisions’ of the state of Louisiana. Each has jurisdiction over a part of the river system and port cluster. The port authorities charge vessels for anchorage and berthing in their jurisdiction. This charge is relatively small, because the port authorities do not charge dredging costs or maintenance costs of port infrastructure. The port authorities invest in facilities, such as warehouses and cranes, leasing them to the private sector. Since the port authorities are able to attract capital at low interest rates through public bonds, these leasing arrangements can be attractive for private firms.

The port authorities have the right to expropriate land for port development, but they do not own vast areas along the river. In general, the bulk facilities along the river are located on privately owned land. Most general cargo facilities are owned by the port authorities, and leased to the private sector (Table 6).

The port of New Orleans is the largest general cargo port. Hence, its port authority is the largest in terms of staff, turnover and involvement in port planning. Plaquemines is the smallest port authority, with almost all of its facilities in private hands. The most important private sector institutions, various organizations and

Table 4
Importance of port-related activity in 12 counties in the LMPC

County	Number of firms	Share of port related firms in total of municipality (%)	Specialisation index (see text)
Plaquemines	86	11.7	8.2
West Baton-Rouge	38	8.8	6.2
Lafourche	155	8.4	5.9
St. James	21	6.7	4.7
St. John	37	5.9	4.2
St. Charles	52	5.9	4.1
Iberville	28	5.2	3.6
Terrebonne	108	4.0	2.8
St. Bernard	41	3.4	2.4
Ascension	45	3.0	2.1
Jefferson	337	2.6	1.8
Orleans	220	2.1	1.5
Total	1168		2.4

Source: US Census Bureau, 2003, data from 2001.

Table 5
Specialization of the LMPC in various port-related activities

Industry description	Specialisation index
Inland water freight transportation	32.4
Coastal and Great Lakes freight transportation	30.6
Deep sea freight transportation	26.8
Marine cargo handling	25.9
Port and harbor operations	21.1
Navigational services to shipping	20.6
Ship building and repairing	15.7
Other support activities for water transportation	14.4
Pipeline transportation of crude oil	13.5
Industrial gas mfg	6.3
Petroleum refineries	6.2
Other warehousing and storage	3.3
Transportation equipment and supplies (except motor vehicle) wholesalers	3.1
Freight transportation arrangement	2.2
Petroleum and petroleum products wholesalers (except bulk stations and terminals)	1.7
Petroleum bulk stations and terminals	1.5
Metal and mineral (except petroleum) whse	1.4
Refrigerated warehousing and storage	1.3
Flour milling and malt manufacturing	1.3
General warehousing and storage	1.0
Process, physical distribution, and logistics consulting services	0.8
General freight trucking, long distance	0.7
Total	2.4

Source: US Census Bureau, 2003, data 2001.

Note: the specialisation index of the LMPC of 2.4 has been calculated excluding 'general freight trucking' firms: the trucking industry is not concentrated in seaports because only a fraction of all trucking activities are related to maritime trade. The trucking firms in the LMPC are related to the port, but trucking firms elsewhere in the country are not. Therefore, this industry is not included in the calculation of the specialization index.

associations that play a role in the LMPC are listed in Table 7.

4.3. The performance of the LMPC

The only performance indicator available is the volume of throughput. This indicator shows the LMPC lost market share between 1990 and 2001, falling from 18%

to 17.2% of total USA throughput. In the same period, Houston managed to increase its market share from 5.8% to 7.6%; other Gulf Ports, such as Mobile and Tampa, did not gain market share (see Table 8).

Considering the fast growing container traffic, the picture becomes more dramatic. Table 9 shows that in the period between 1980 and 2001, total container traffic through US ports almost quadrupled, while container flows through US Gulf ports nearly tripled. During the

Table 6
Description of port authorities

Port authority	Parishes in jurisdiction	Governance structure	Annual volume (year 2000)	River mileage	Activities of port authority	Major commodities
Plaquemines	Plaquemines	Board of commissioners are elected municipal governors	59,900,000	From the mouth of the river to 100 miles inland	Very limited, all facilities are privately owned	Liquid bulk
St. Bernard	St. Bernard	Board of commissioners appointed by the state governor and parish presidents	Small volume	Jurisdiction over an artificial basin along the river	St. Bernard owns one area that is leased to private firms	General cargo
New Orleans	New Orleans, Jefferson	Board of commissioners appointed by the state governor and parish presidents	90,800,000	From mile 100 to mile 114.9	Port authority owns relatively much land; leases to private operators	General cargo, especially containers, steel and coffee
South Louisiana	St James St. Charles St. John	Board of commissioners appointed by the state governor and parish presidents	217,700,000	From mile 114.9 to mile 168.5	Limited, almost all facilities are privately owned	Dry and liquid bulk
Baton Rouge	West Baton Rouge	Board of commissioners appointed by the state governor and parish presidents	65,600,000	From mile 169 up to mile 243	Port authority owns relatively much land; leases land and facilities to private operators	Steel, fruit, containers

Table 7
Relevant associations in the LMPC

Organisation	Role
<i>The New Orleans Board of Trade</i>	The board has members from across the maritime industry and provides information on ship arrivals. The Board of Trade does not represent an interest group. Currently it plays a modest role in cluster governance
<i>The World Trade Center of New Orleans</i>	An association of trade related firms. The organisation does not represent a specific interest group, and has a relatively large membership across the port cluster. The WTC is not deeply involved in cluster governance
<i>The Greater New Orleans Barge Fleeting Association</i>	This association represents the interests of the barge fleeting firms in the region and is hardly involved in the governance of the port cluster
<i>The Mississippi Valley Trade and Transport Council</i>	This organisation represents the interests of all firms related to transport and trade in Louisiana. The organisation is not deeply involved in cluster governance
<i>The Steamship Association of Louisiana</i>	This association represents the interests of the shipping lines and shipping agents in Louisiana
<i>The Mississippi River Maritime Association</i>	This association represents the interests of the shipping agents in Louisiana. It 'competes' with the Steamship Association
<i>The Pilot User Group of Louisiana.</i>	This group is a 'single issue association', focusing on lower pilot's charges in various parts of Louisiana
<i>The International Freight Forwarders and Customs Brokers Association of New Orleans</i>	This association represents the interests of the freight forwarders and customs brokers. The association is hardly involved in governance
<i>The New Orleans Chamber of Commerce</i> <i>Metrovision Economic Development Partnership</i>	This association is involved in the cluster through its transport committee Metrovision is a public privately funded organisation, related to the Chamber of Commerce. It receives funding from the state, counties and private member firms. The organisation launched cluster initiatives, among others for the 'maritime cluster'

same period, the number of containers passing the LMPC remained stable, and even decreased during the

1990s. Between 1980 and 2001, the number of containers handled in the LMPC, as a percentage of the total

Table 8
Market share of the LMPC and three other gulf ports

	Market shares (%)			
	1990	1997	2000	2001
LMPC	18.0	18.1	17.6	17.2
Houston	5.8	7.1	7.8	7.6
Mobile	1.9	2.1	2.2	2.0
Tampa	2.4	2.4	2.2	1.9

Source: US Army Corps of Engineers (2003).

Table 9
Underperformance of the LMPC in container traffic (number of containers)

Year	1980	1985	1990	1995	1998	2001
New Orleans	279,500	380,000	157,000	198,000	245,000	247,000
Houston	300,000	363,000	502,000	705,000	968,000	1072,000
US Gulf	580,000	812,000	822,000	1188,000	1479,000	1652,000
Total USA	7,658,000	11,480,000	15,266,000	22,339,000	26,175,000	30,471,000
Market share NO in Gulf	48.2%	46.8%	19.1%	16.7%	16.6%	15.0%
Market share NO in USA	3.6%	3.3%	1.0%	0.9%	0.9%	0.8%

Source: US Army Corps of Engineers (2003).

Table 10
Specialisation pattern of five US ports

Activity type	Mobile	LMPC	Houston	Tampa	LA/Long Beach
Support activities for water transportation	10.4	15.3	3.4	2.2	1.0
Freight transportation arrangement	1.6	2.3	2.0	0.8	2.3
Petroleum and petroleum products wholesalers	1.6	1.7	3.2	0.7	0.5
Process, physical distribution, and logistics consulting services	0.5	0.7	0.3	1.4	0.7

Source: US Census Bureau (2003).

number of containers handled in USA seaports decreased from 3.6% to 0.8%. Over the same time period, the LMPC's market share in the Gulf tumbled from 48.2% to 15.0%.

Another indication of the performance of the LMPC can be obtained by comparing the specialization pattern of the LMPC with that of other port clusters. This indicator shows the extent to which the presence of cargo handling has attracted other economic activities. Table 10 shows the specialization pattern of five ports: four ports in the Gulf and one on the Pacific coast.

These figures show that 'support activities for water transportation', the core function of a port, concentrate in the LMPC. Firms involved in these activities simply have to be located at deepwater facilities. Activities that *may* locate in a seaport, but which may also locate elsewhere, such as logistics consultants and transportation arrangement businesses, are not so much concentrated in the LMPC. This indicates that the relatively large LMPC does not exploit its size advantage, attracting a relatively

large share of the more footloose, possibly more knowledge intensive, port-related activities. Considering the above evidence altogether, we conclude that the LMPC performed poorly over the last decades.

4.4. Quality of collective action regimes in the LMPC

The interviewed experts in the LMPC were asked to indicate whether collective action would be desirable in five areas, listed in Table 11. These five issues were identified as areas where collective action could be beneficial, on the basis of cluster literature (de Langen, 2004). All five, innovation, education, marketing, internationalisation and hinterland access are considered as relevant collective action problems (CAPs) for the LMPC. Furthermore, these CAPs are regarded to be important for the performance of the port cluster. Hinterland access is regarded to be especially important (see Table 11). Each regime will be discussed below.

Table 11
Collective action regimes

Issue	Is the collective action problem relevant for the five listed issues?		Importance of the regime for improved performance
	Yes	No	
Hinterland access	24*	0	4.8
Marketing and promotion	28*	0	4.6
Innovation	24*	1	4.5
Internationalisation	26*	0	4.4
Training and education	27*	0	4.1**

Notes: the importance of a collective action regime has been rated on a scale from 1 (not important) to 5 (very important); * = significant majority; ** = significantly less important than other CAPs.

4.4.1. The innovation regime

In the LMPC, no cooperative or collective investments in innovation have been or are being undertaken. No organisation provides incentives for innovation in the LMPC. Individual firms are thus not stimulated or enabled to innovate. The firms in the cluster are not innovative, mainly because most firms are branch affiliations with limited decision-making power, of mother firms located elsewhere. Data on experts' opinions in Rotterdam and the LMPC regarding the quality of the 'innovation regime' in their port cluster are summarized in Table 12.

The innovation regime in the LMPC is relatively poor. The lack of leader firms is the largest problem: due to the absence of leader firms there is no basis for innovation projects. The lack of a community argument prevents the development of coalitions with large numbers of involved actors. Voice is exerted, but this is insufficient to improve the regime quality.

4.4.2. The hinterland access regime

The quality of the hinterland access is elementary for the competitiveness of the LMPC, since the vast majority of cargo is transit cargo. However, no collective investments to improve the accessibility of the hinterland are made. The port of New Orleans has a (strategic) partnership with the inland port of Memphis, but this partnership has not resulted in joint initiatives to improve the corridor between Memphis and the LMPC.

Collective action to improve road accessibility is not necessary, as the road accessibility is relatively good. The same is true for barge shipping. An efficient system

with barges has been in operation for decades. However, this system only accommodates bulk flows. In the LMPC, collective efforts to improve the hinterland access are required in two cases: containers on barge, and the rail accessibility of the port. The transport of containers by barge has to date not been successful, at least partially because cooperation to create sufficient cargo and investment funds has been absent.

Even though six 'class A' railroads serve the port, these railroads do not invest in improving the accessibility of the Lower Mississippi, because container volumes are limited, given the modest market position of the LMPC in the container market. Consequently the railroads do not develop services tailored for the LMPC market. More cooperation and coordination in the rail market is widely regarded as necessary. The experts regard the hinterland access regime as a weakly developed regime (Table 13).

Two conclusions can be drawn on the basis of these data. First, the lack of leader firms hampers the development of a good hinterland access regime. Second, the role of public actors is weak and ineffective, compared to Rotterdam. Public actors have an important role to play in the hinterland access regime, but have insufficient impact in the LMPC.

4.4.3. The marketing and promotion regime

Three shortcomings of the marketing regime are widely acknowledged. Firstly, the five port authorities have individual marketing efforts. This is a serious shortcoming of the marketing regime, since the indi-

Table 12
Expert evaluation of the quality of the innovation regime

Variable	Rotterdam	LMPC
Leader firms	5*,**	-0.8
Public actors	0.1	-0.5
Organisational infrastructure	0.8	0.4
Community argument	-0.8***	-0.8
Voice	0.0	0.7**
Overall score	0.2	-0.2

Notes: the overall score of the regime is calculated by multiplying the score for each of the variables with the importance they attach to that variable. All scores on a scale from -5 (very poor) to +5 (very good); * = significantly higher score than in the LMPC; ** = significantly higher score than average of all factors in same port cluster; *** = significantly lower average judgment of all factors in the same port cluster.

Table 13

The expert evaluation of the quality of the hinterland access regime

Variable	Rotterdam	LMPC
Leader firms	2*.**	0.2
Public actors	2*.**	0.8
Organisational infrastructure	0.7	0.3
Community argument	0.9	0.1
Voice	1.0	0.4
Overall score	1.1*	0.3

Notes: rated on a scale from –5 (very poor) to +5 (very good); * = significantly higher score than in the LMPC; ** = significantly higher score than average of all factors in same port cluster.

vidual port authorities do not have the size to invest in a professional marketing department and they are not in a position to do the marketing for the cluster as a whole. The five Lower Mississippi port authorities acknowledged this point; in September 2002, they signed an official agreement stating that they will combine efforts to jointly market the Lower Mississippi, e.g. through joint representation at national and international exhibitions. The agreement provides a good starting point to step up co-operation. On the other hand, however, so far no funds have been made available for the joint marketing program.

Secondly, there is (still) no structural involvement of private firms, or associations, in the ‘marketing and promotion regime’. The private firms have limited marketing budgets and hardly cooperate to jointly attract new customers. The port of New Orleans has the most substantial funds dedicated to marketing. They are in the process of involving the business community, but so far could not create an effective marketing regime.

Thirdly, market intelligence is (still) lacking. The five port authorities have taken the first step to improve the market intelligence. Table 14 shows expert judgements of the marketing regime in the LMPC and Rotterdam.

Three conclusions can be drawn from these results. First, a lack of leader firms hampers the development of an effective regime. Second, organisational infrastructure for joint marketing is required, especially given the absence of leader firms, but is still insufficient in the LMPC. Third, the role of public actors, especially the port authority of New Orleans is judged positive; in fact, they are the only ones involved in marketing.

4.4.4. The internationalisation regime

The LMPC depends to a large extent on the development of the trade with Latin America (LATTs, 2003). Trade networks are evolving rapidly, as many of these countries are in a process of opening up their economies. For this reason, an internationalisation program aimed to improve the acquaintance with and image of the Lower Mississippi and to enhance network relations is widely regarded as of strategic importance for the LMPC.

Metrovision organised trade missions. However, the willingness of the business community to participate was limited. Thus, these activities were discontinued and Metrovision reduced efforts to support the internationalisation of firms. The World Trade Center organises international events but does not focus on the LMPC, or on Latin and South America. The assessment of the quality of the ‘internationalisation regime’ is given in Table 15. Again, the lack of leader firms is striking.

4.4.5. The training and education regime

The ‘education infrastructure’ for port-related jobs, such as terminal operations, barge fleet, and logistics management is not up-to-standard keeping in mind the fact that the LMPC is a large port cluster. Schools do not offer specific training and education courses. Training is done ‘on the job’ by individual firms. Furthermore, a large number of the employees have irregular job contracts that prevent investment in education. The port community is not actively involved in improving the education and training infrastructure.

Table 14

Expert evaluation of the quality of the marketing and promotion regime in the LMPC compared to Rotterdam

Variable	Rotterdam	LMPC
Leader firms	0.5	–0.2
Organisational infrastructure	1.3*	–0.2
Public actors	1.4	1.3**
Community argument	0.2***	–0.2
Voice	0.7	0.9**
Overall score	0.7	0.2

Notes: rated on a scale from –5 (very poor) to +5 (very good); * = significantly higher score than in the LMPC; ** = significantly higher score than average of all factors in same port cluster; *** = significantly lower average judgment of all factors in the same port cluster.

Table 15
Expert evaluation of the quality of the internationalisation regime

Variable	Rotterdam	LMPC
Leader firms	1.3*,**	-0.5***
Public actors	0.2	0.4
Organisational infrastructure	1.1	0.8
Community argument	-0.4***	0.1
Voice	-0.1	0.5
Overall score	0.4	0.2

Notes: rated on a scale from -5 (very poor) to +5 (very good); * = significantly higher score than in the LMPC; ** = significantly higher score than average of all factors in same port cluster; *** = significantly lower average judgment of all factors in the same port cluster.

Table 16
Expert evaluation of the quality of the training and education regime

Variable	Rotterdam	LMPC
Leader firms	1.6*	-1.9***
Organisational infrastructure	2.0*,**	-1.3
Public actors	0.8	-0.8
Community argument	1.1*	-1.0
Voice	1.0*	-0.4**
Overall score	1.1*	-1.1

Notes: rated on a scale from -5 (very poor) to +5 (very good); * = significantly higher score than in the LMPC; ** = significantly higher score than average of all factors in same port cluster; *** = significantly lower average judgment of all factors in the same port cluster.

Over the last 20 years, a large number of the port-related 'brain-jobs' have left New Orleans. These jobs have moved to other locations, such as Houston and St. Louis. As a result, an inland shipping periodical is published in St. Louis, while consultants working for the port or related industries in the LMPC usually come from elsewhere, outside the cluster area. A good higher education program for freight logistics is an important element of a strategy to attract 'brain' activities. In 2000, an effort was made to start a Masters program, but this failed because of lack of interest from the business community. The assessment of the quality of the training and education regime is given in Table 16.

This regime is the worst of the five regimes. The lack of leader firms and organisational infrastructure are serious shortcomings, while public actors are not enough concerned with the quality of training and education. As a result, the LMPC is not an attractive location for port-related firms with (knowledge-intensive) labour as their main asset.

Table 17 summarises the analysis of the five collective action regimes. The general conclusion is that the regimes are not effective.

A final survey question made cluster experts compare the LMPC and Houston on a few aspects of governance and the quality of collective regimes.⁴ In all these re-

spects, the LMPC got relatively low grades. The absence of leader firms in the LMPC is noteworthy, next to the relatively poor quality of collection action regimes in the LMPC (Table 18).

5. Initiatives to improve the collective action regimes

The survey data show that the collective action regimes in the LMPC are not effective. Strategic partnerships have hardly developed, and no funds are available for investments with benefits for the whole cluster. The level of trust is low, compared to Houston, and there is hardly any leader firm involvement in the port cluster. The general perception among the consulted cluster experts is that the LMPC is declining, and that the lack of strategic co-operation is one of the main reasons for the decline. Various initiatives to remedy the situation and to improve the collective action regimes in the LMPC will be discussed below.

5.1. Co-operation between the port authorities

The five deepsea ports in the LMPC compete in three ways. First, they compete for investments in their jurisdictions. Second, the port authorities compete for cargo; they support firms in their jurisdiction, e.g. through attractive lease contracts, with the goal to attract more cargo to the port. Third, port authorities compete for state investment funds. The state provides about US \$24 million for port investment annually for

⁴ The experts were all working in the LMPC, but the majority of them also had a branch in Houston. Experts were asked whether they were sufficiently informed to evaluate Houston. Whenever they were not sufficiently informed, they did not answer the question.

Table 17

Involvement of different actors in developing collective action regimes in the LMPC

Regime	Private	Public–private partnerships (PPP)	Association	Public
Marketing and promotion	Hardly marketing efforts	No PPP exists	No or hardly any marketing efforts, Metrovision cluster initiative aims to improve market intelligence	Port of New Orleans does marketing, initiatives for joint marketing of port authorities
Training and education	Only limited training on the job	No PPP exists	No efforts, previous efforts failed	No involvement
Hinterland access	Limited investments to improve access	No PPP exists	No role in enabling cooperation	Public Belt railroad becoming active
Innovation	Very limited investments in innovation	No PPP exists	No role in enabling innovation	Universities contribute modestly to innovation in the LMPC
Internationalisation	Limited involvement	Limited involvement of Metrovision	World Trade Center not strategically involved	Hardly any activities

Table 18

Experts judgments of governance in the LMPC and Houston

Variable	LMPC	Port of Houston
Culture of trust	−0.4	1.4
Embedded leader firms	0.1	2.9
Collective action regimes	0.0	2.0

Note: figures on the scale of −5 (very bad) to +5 (very good).

all Louisiana ports (including the shallow draft ones). The lack of coordination between the port authorities and the resulting competition has the following disadvantages:

- Underinvestment in activities with benefits that spill over to other port jurisdictions. The port of Plaquemines provides a good example: the port hardly invests because the advantages (in terms of competitiveness, added value and employment) of such investments are to a large extent ‘external’ to Plaquemines. Since the local community consisting of nearly 25,000 inhabitants indirectly governs the port authority, these external benefits have not been taken into account in investment decisions. Other examples include the lack of joint efforts to solve the five collective action problems discussed in the preceding section.

- Spatial misallocation of investments. Since port authorities try to attract business, they invest in facilities in their jurisdiction, even when alternative locations make more sense from a business point of view. The investments of the port of New Orleans in container facilities are an example. Two sites were developed, both at questionable locations, relatively far upstream and moderate landside access. The locations were developed because the port owns only a limited amount of land and did not have better alternative locations. Firms as well as governments still consider investing in a container facility more downstream, in Plaquemines territory, but the investments of the port of New Orleans

have a negative effect on the viability of such a project. This is a weakness for the LMPC, since such investments would be a step forward for the LMPC.

- Over investment in similar port facilities. Competition between port authorities leads to a high willingness to invest in facilities within their jurisdiction, even if these investments merely duplicate existing facilities elsewhere in the LMPC, and thus create over-capacity.

Considering the above, it is not surprising that more co-operation between the authorities is widely regarded as an important step towards a more effective governance of the LMPC. Steps towards co-operation include the formal agreement for joint marketing and the ‘maritime cluster initiative’, in which all port authorities participate. Funding, however, is not structural; an arrangement with annual and fixed financial contributions tagged to the turnover of the port authorities would be a major step forward.

For the long term, the business community recommends a further integration of the activities of the five port authorities. A new model has been proposed in which the five authorities are managed by five independent executives, but are governed by one overarching board of directors with representation of the parishes involved, the business community and the state of Louisiana. In any case, it is clear to all stakeholders that more cooperation is desirable, on top of what has been accomplished so far.

5.2. A more effective 'organisational infrastructure' of firms in the LMPC

The existing associations in the LMPC are hardly involved in strategic decision making on issues such as training, education, and innovation. They serve the interests of their members but do not have the financial nor institutional backing to improve the collective action regimes. Consolidation of the associations would be an improvement. The cluster experts indicate that some consolidation is required, but that leadership to enforce consolidation is missing.

A coalition has been set up to improve the market intelligence in the cluster: the maritime cluster initiative. This coalition includes the state of Louisiana, the five port authorities, the *Millennium Port Authority*, *Metrovision*, the University of New Orleans, the Public Belt Railroad, the pilot associations, the board of trade, the Mississippi River Maritime Association and the steamship association. It was initiated by *Metrovision*, and is chaired by two industry leaders in the New Orleans region—a good example of the importance of leader firms. This coalition, where four associations cooperate, is the first step towards a more effective institutional structure of the private sector, which could develop into the following structure (see Fig. 2).

In Fig. 2, one port cluster association deals with strategic issues, while the various associations linked to the overarching cluster association continue to promote specific interests of their members. Specialised associations representing interests of the offshore, shipbuilding or petrochemical industry, could join the cluster association. A similar structure was recently created in Rotterdam, and considerably improved the 'organisational infrastructure'. The key challenge of the cluster association is to generate resources for investments with cluster benefits, such as training, education, and innovation. These resources can also be attracted by forming

coalitions with organisations outside the cluster, such as the US Coastguard, the US Customs, the State of Louisiana, and even federal departments. These organisations can provide means for investments in the cluster, if a cluster-wide coalition is able to 'get things done'.

5.3. Improved rail accessibility to the LMPC

All six 'class A railroads' (with a national network) offer train services to or from New Orleans. However, due to the limited size of market, the port is not a priority for these railroads. Thus, even though the railroads serve the LMPC, the quality of the rail accessibility from the port to the hinterland is bad. The rail access is especially relevant in the container market. About 35% of all containers are put on rail.

The *New Orleans Public Belt Railroad* plays a leading role in improving the quality of the rail services to and from the LMPC. This organisation carries out local interterminal traffic between the rail terminals. The Public Belt Railroad aims to improve the rail accessibility by offering a 'one stop shop service' for the railroads. The Public Belt recently started to manage the rail terminal of two of the six railroads and aims to take over the yard activities from the other railroads. The railroads encourage this initiative, since their competence is operating long distance trains, not local operations. When the Public Belt Railroad develops into a regional communication and dispatch centre, that provides information to the railroads, creates complete trains for the railroads and manages the train movements in the region, the rail accessibility of the LMPC improves.

5.4. A competitive container terminal

The market with the best growth prospects for the LMPC is the container market. Even though the Lower Mississippi is the largest port complex of the USA in

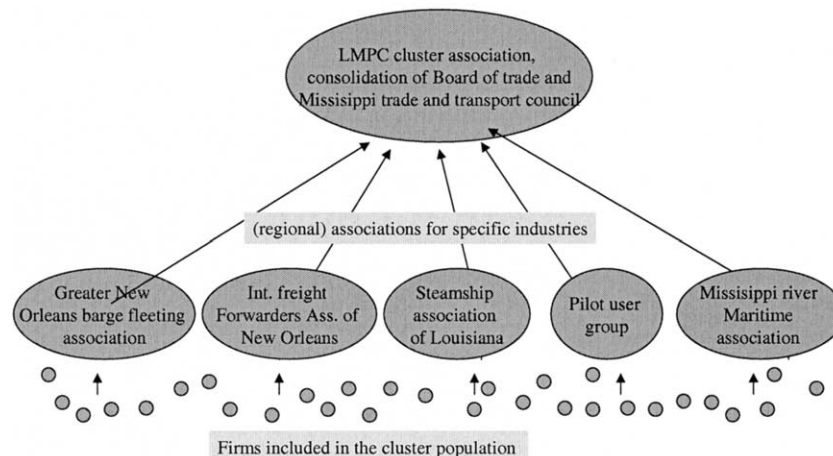


Fig. 2. Improved organisational structure of firms in the LMPC.

terms of throughput volumes, the port is losing market share in containers, especially to Houston, even the absolute number of containers has been declining. This is a weakness of the port cluster, and a threat for the future. More goods, such as fruit, coffee, perishables and even cars and some liquid bulk commodities are containerised. The port complex could thus lose more traffic, because of its weak position as a container port. The following factors explain the weak position of the port complex:

- The east–west structure of container shipping networks. The major trades are between USA and Europe and between USA and Asia. The former call at ports on the Atlantic coast, such as New York and Hampton Roads. The latter call at ports on the Pacific coast such as Seattle and Los Angeles/Long Beach. Ports in the Gulf are not served by the main services and play a role in niche markets only. The most promising niche market is the trade between USA and Latin and South America.
- The ‘captive’ cargo base of the LMPC is very limited. Houston, located 450 miles away from New Orleans, has a local cargo base of about 700.000 TEU. For this reason, most shipping lines call at Houston in the first place and do not consider the Lower Mississippi as an alternative, at best as a second Gulf port.
- All cargo-handling facilities are along the river and about 100 miles inland. This means that a call in the Lower Mississippi adds additional sailing time. This is only economical when the cargo volume is large, which is not the case in New Orleans, contrary to Houston.
- The natural advantage of the Mississippi port complex, its vast inland river system has not attracted much container traffic, because of the long duration of barge transport.

The current weakness of the LMPC in the container market is a ‘lock in’. In principle, containers could be attracted, but only if all parts of the intermodal chain are competitive. A terminal downstream and container barge services are lacking and rail services are not sufficiently developed. Since investments to address these weaknesses in isolation are not viable, coordination is required.

Container on barge and better rail services could be viable if more services would call at the port, and vice versa. Some developments to improve services take place in all three parts of the chain, but not in a sufficiently coordinated way. Baton Rouge has invested in the first inland container terminal in the Mississippi, with a substantial annual base volume from one shipper. However, the majority of the volume will be shipped to the port of Houston, even though inland shipping to New Orleans is per container about US \$150 cheaper than to Houston. This can be explained by the fact that the port of New Orleans is not regularly called at by shipping services.

An initiative by the Federal Maritime Commission (FMC) to promote inland shipping, is an opportunity

for the LMPC. The FMC acknowledges the substantial positive external effects of shifting cargo from road and train transport to barge transport. Such a modal shift reduces pollution and relieves congestion. The initiative would assess strengths, weaknesses and opportunities of container barge shipping. For the LMPC, participating in this project would be an effective way to attract resources for innovation, training and education, and the marketing of container barge shipping. So far, no strong coalition has been formed, but the opportunity is acknowledged. The ports and other stakeholders in the region, with a leading role for the port of New Orleans, acknowledge the necessity to invest in new container facilities in order to improve the competitive position of the LMPC. For this purpose, the *Millennium Port Authority* was created. This organisation is another independent port authority with a board of governors appointed by the five deepwater ports in the Lower Mississippi, one other Louisiana deepwater port and various state departments. The Millennium Port Authority is in charge of planning new container facilities in the LMPC. A promising plan is *Sea Point*, a private initiative of two New Orleans-based investors. Their concept is innovative: an artificial island *Sea Point* would be located towards the mouth of the river in the Jurisdiction of the port of Plaquemines to tranship containers to barges and bring these further inland, both to the port of New Orleans and to inland destinations. This would save ship sailing time. Even though this project is innovative and has substantial positive externalities for other firms/port authorities in the cluster, it is still unclear whether a coalition between *Sea Point*, the *Millennium Port Authority*, and the other LMPC port authorities will develop.

6. Conclusions

In this paper, we analysed collective action regimes in the LMPC. A number of conclusions can be drawn on the basis of this case study. First, according to the experts, effective regimes are important for the performance of the LMPC. The validity of this expert opinion is confirmed by the description of the five collective action regimes. Second, the collective action regimes in the LMPC are not effective. This conclusion is based on the expert opinions, the description of the regimes and a comparison with the expert evaluation in Rotterdam. The LMPC has lost cargo as well as economic activities to other (port) regions. The experts judge the quality of five important regimes as relatively poor. In all five regimes resources are lacking. Furthermore, the regimes are less effective than the regimes in Rotterdam. Education is the worst of the five regimes. There is no cooperation and consequently no education infrastructure. The absence of leader firms is felt in all five

regimes. Third, actors take initiatives to improve the collective action regimes, but such improvements are hard to achieve. There is consensus among the experts with regard to the shortcomings of the present collective action regimes and shared ideas about solutions to address those shortcomings. The key issue is to generate resources. The port authorities have a relatively small turnover, because many terminals are on private land. As a consequence the port authorities have limited funds for investments. Leader firms with ‘deep pockets’ are lacking. As a consequence, the ability to build coalitions with actors ‘outside’ the cluster, such as the state of Louisiana, the US Army Corps of Engineers and federal government bodies is crucial.

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